GlobeCore

Transformer online monitoring and drying systems

Continuous transformer drying unit

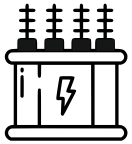
CMM-260C

Water is a dangerous enemy for a transformer, because it reduces the oil breakdown voltage and accelerates the aging of oil and solid insulation. It is impossible to completely prevent the ingress of water into a transformer: it occurs regardless of the maintenance quality or the sealing level. However, it is possible to protect a transformer against moisture by continuous drying with the use of CMM-260C unit.

The CMM-260C unit is connected to a transformer and keeps it dry throughout its service life by pumping the oil through a microporous sorbent placed in three adsorbers. The water is absorbed by the sorbent, securely retained in its crystals, and prevented from getting back into the oil, which is returned to the transformer.

If required, adsorbers can be easily removed and replaced with new ones, or sorbent can be regenerated by means of a BRZ sorbent regeneration unit and reused for transformer drying.

Parameter	Value
Oil pumping rate, L/h, at least	30
Amount of water that can be absorbed by adsorbers, L	9
Mass of sorbent in one adsorber, kg	21
Processed oil parameters: – mass fraction of moisture in oil, ppm, not more than – industrial purity class of ISO 4406 – breakdown voltage, kV, at least	 <5 -/14/12 >65
Output pressure, bar	2
Oil supply head, m	20
Max power requirement, kW, not more than	0,25
Power supply parameters: – voltage, V – AC frequency, Hz	Any customizable values
Overall dimensions, mm, not more than: – length – width – height	 1177 553 1948
Weight, kg, not more than	250



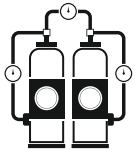
working with any type of transformers

connecting takes at least 1 hour

energy efficiency

fixed-type or temporary placement

rapid change of adsorbers



adsorbers adapted to sorbent regeneration

extended service life of transformers

Continuous transformer drying system

TOR-4

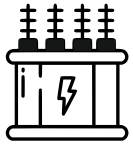
The TOR-4 continuous transformer drying system performs the same functions and has the same capabilities as the CMM-260C continuous transformer drying system, but offers additional options.

These options include:

- placement in a special protective housing;
- measurement of moisture content at the unit's outlet, local indication;
- the ability to visually monitor the sorbent saturation rate;
- visual monitoring of the filter clogging rate.

In order to protect a transformer against leaks, the oil level in the transformer is monitored. The required level is set and maintained by the controller. In the event of an oil leak, automatic valves shut off the oil flow from the transformer, and the TOR-4 system stops running.

Parameter	Value
Oil pumping rate, L/h	30
Amount of water that can be absorbed by adsorbers, L	9
Mass of sorbent in one adsorber, kg	21
Output pressure, bar	2
Output pressure head, m	20
Max power requirement, kW	0,2
Power supply parameters: – voltage, V – AC frequency, Hz	Any customizable values
Connection: – oil inlet, Dn – oil outlet, Dn	 20 20
Overall dimensions, mm, not more than: – length – width – height	 1310 557 1960
Weight, kg, not more than	380



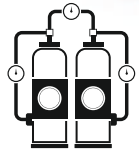
working with any type of transformers

connecting takes at least 1 hour

energy efficiency

fixed-type or temporary placement

rapid change of adsorbers



adsorbers adapted to sorbent regeneration

securely enclosed in a housing

extended service life of transformers

Transformer online monitoring system TOR-5

The TOR-5 unit, like the CMM-260C and TOR-4 units, can operate intransformer drying mode, but is additionally equipped with TIMS (TransformerInsulation Management System).

Therefore, the main purpose of the TOR-5 system involves online monitoringof transformers by evaluating the condition of insulating oil, including special-purpose transformers: traction, mine, electric-furnace, marine, wind turbinestep-up transformers, etc.

The system is connected to the transformer and constantly located nearby.Upon connecting the system, a closed circulation loop is formed: the oil comesfrom the transformer tank bottom, passes through the TOR-5 system sensors,and returns to the transformer top. The sensors measure transformer oilparameters once a minute and transmit them to a cloud server, where otherparameters are calculated using the GlobeCore technique to ensure a fullerevaluation of the transformer status.

Important transformer parameters determined by TOR-5 system:

- moisture content of oil at the transformer top and bottom;
- moisture content of solid insulation at the transformer top and bottom;
- dielectric strength of oil;
- oil quality index.

In order to view all the measured and calculated parameters from anywhere inthe world, all you need is an Internet connection to access the password-protected web page. There you can find information about all the transformersconnected to TOR-5 systems.

You can view the data for any period of time. The information is conveniently presented in the form of graphs, dot charts, and labels, and transformers aredisplayed on a world map.

This model of equipment is also available in TOR-5H version, which isadditionally equipped with an oil hydrogen sensor.

Parameter	Value
Oil pumping rate, L/h, at least	30
Amount of water that can be absorbed by adsorbers, L	9
Mass of sorbent in one adsorber, kg	21
Output pressure, bar	2
Oil supply head, m	20
Max power requirement, W, not more than	500
Power supply parameters: – voltage, V – AC frequency, Hz	Any customizable values
Attachment dimensions: – oil inlet, Dn – oil outlet, Dn	 20 20
Overall dimensions, mm, not more than: – length – width – height	 1541 553 1960
Weight, kg, not more than	435

working with any type of transformers

connecting takes at least 1 hour

energy efficiency

fixed-type or temporary placement

rapid change of adsorbers

adsorbers adapted to sorbent regeneration

securely enclosed in a housing

remote monitoring of transformer parameters via the Internet

saving money on laboratory analyses and maintenance of transformers

extended service life of transformers

Comparing the CMM-260C, TOR-4, TOR-5, TOR-5H units

Description	CMM-260C	TOR- 4	TOR- 5	TOR- 5H
Design	Lite	Premium	Premium	Premium
Cabinet-type design	Yes	No	No	No
Enclosed in a protective housing	No	Yes	Yes	Yes
Sorbent-based dehydration of oil	Yes	Yes	Yes	Yes
Measuring the moisture content at the unit's inlet, local indication	Yes	Yes	Yes	Yes
Measuring the moisture content at the unit's outlet, local indication	No	Yes	Yes	Yes
Sorbent saturation monitoring	No	Yes, visual type	Yes	Yes
Filter clogging rate monitoring	No	Yes, visual type	Yes	Yes
TIMS (Transformer Insulation Management System) – system for monitoring and estimating the state of transformer insulation; remote web interface	No	No	Yes	Yes
Hydrogen measurement, indication via web interface	No	No	No	Yes
Overall dimensions mm: length width height	 1177 553 1948	 1310 557 1960	 1541 553 1960	 1541 553 1960
Weight, kg, not more than	250	380	435	436

BRZ sorbent regeneration unit for transformer online monitoring and drying systems

The BRZ unit is designed to regenerate (reclaim the properties of) sorbent for reuse in the CMM-260C, TOR-4, TOR-5, and TOR-5H units. Regeneration is achieved through hot-air treatment, which removes excess moisture from the sorbent.

The BRZ unit is designed in such a manner that a special capsule is integrated into its housing and can hold a sorbent cartridge previously removed from the transformer online monitoring and drying units.

Thus, the BRZ unit can be used both in the field near the transformer and in repair shops, where sorbent cartridges requiring regeneration can be delivered.

Parameter	Value
Heater power, kW, not more than	30
Air blower drive power, kW, not more than	9
Power requirement, kW, not more than	21
Parameters in zeolite drying mode: – air blower throughput, m^3/h – heated air temperature, °C	 144 from +80 до +250
Overall dimensions, mm, not more than: – length – width – height	 1430 850 1680
Weight, kg, not more than	400

zeolite regeneration

compact dimensions

operation in the field

money saving

Operation of GlobeCore transformer online monitoring and drying systems

Address:
Sadovskogo, 14,
Poltava, Ukraine, 36034
Contacts:
Tel: +38(093)-486-94-40
E-mail: marketing@globecore.com